

## THE SURGICAL TREATMENT OF CYSTS OF THE THYROGLOSSAL TRACT

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VERY early in fetal life the thyroid gland develops at the base of the tongue and, before the cartilage of the hyoid bone has formed, descends in the midline of the neck to its normal position. The epithelium lining this tract through which the thyroid descends normally disappears early in fetal life, although it occasionally fails to obliterate and in such instances isolated areas of thyroid tissue (aberrant thyroids) or cysts may develop along its course. It seems quite likely that the portion of the tract lying above the hyoid bone often retains its epithelium and patency and opens directly into the mouth through the foramen cæcum near the base of the tongue. A persistence of this portion of the duct explains the development of cysts along this tract which do not appear in young children but are first noticed a number of years after birth. In such instances it is probable that any secretion which developed from the epithelium-lined tract emptied directly into the mouth through the foramen cæcum, and that at some time infection occurred in the duct and closed the opening into the foramen cæcum. Any fluid accumulating in this duct after the opening in the foramen cæcum has become blocked, most likely travels downward, following the tract made by the descending thyroid, and presents itself as a tumor in the midline of the neck near the hyoid bone.

In 86,000 consecutive patients examined in the Mayo Clinic only 31 thyroglossal cysts were found. Eighteen of these were in males and 13 in females. The cysts appeared at all ages from birth to fifty-three years, the majority being noted in patients between the ages of twenty and twenty-five years. In 25 of these patients the cyst was found in the midline of the neck, near the hyoid bone.

The diagnosis of such cysts is usually not difficult and is made by the finding of a rather firm, cystic tumor in the midline of the neck, near the hyoid bone or the thyroid cartilage. When this is palpated the duct which runs from the cyst to the hyoid bone may usually be felt. If the cyst is left alone, it gradually enlarges and often is drained surgically. In other cases infection occurs within the cyst and an abscess forms which also is often opened and drained. In either case a sinus remains which discharges the fluid secreted by the epithelium lining the tract. In many of the patients whom we have examined fistulas have been present which had persisted for periods varying from six months to twenty-nine years.

The majority of operations for the cure of thyroglossal cysts are unsuccessful unless the epithelium-lined tract, running from the cyst to the foramen cæcum, is completely removed. As a rule, the cyst and the portion of the tract lying below the hyoid may be dissected out without difficulty, but above this the tract is usually so small and friable that it is broken off easily and consequently is difficult to remove. We have learned, after having failed to cure certain patients in whom the duct was broken off between the hyoid bone and the foramen cæcum, that better results are obtained when no attempt is made to isolate the duct above the hyoid bone. Instead of attempting this, the usual procedure, we remove with the duct the tissues surrounding it for a distance of about one-eighth of an inch on all sides, coring out, as it were, the tissues between the hyoid bone and the foramen cæcum in a line, which the tract almost invariably follows, drawn at an angle of forty-five degrees from the upper surface of the centre of the hyoid bone in the midline of the neck, backward and upward, toward the base of the tongue (Figs. 1 and 2).

The operation we usually perform is as follows: A transverse incision, about two inches in length, is made across the neck at about the level of the hyoid bone and the skin and platysma muscle are reflected. The cyst will be found lying beneath the raphé connecting the sterno-hyoid muscles. It is dissected free from the surrounding tissues up to the hyoid bone. At this point the tract usually passes through the hyoid bone, although it is sometimes found passing above or below it. We then separate the muscles attached to the centre of the hyoid and remove a portion of the bone about one-fourth of an inch in length; then, without any attempt to isolate the duct, we core through the tissues from this point directly to the foramen cæcum, removing with the duct the tissues surrounding it for a distance of about one-eighth of an inch on every side (Fig. 3). In order to do this, it is necessary to know very accurately the direction that must be followed in order to reach the foramen cæcum. This line corresponds to one drawn at an angle of forty-five degrees backward and upward through the intersection of lines drawn horizontal and perpendicular to the superior central portion of the hyoid bone. The dissection removes with the duct a portion of the hyoid bone, a portion of the raphé joining the mylohyoid muscles, a portion of each geniohyoglossus muscle, and the foramen cæcum. The opening into the mouth is closed and several sutures are used to draw the geniohyoglossus muscles together; the tissues surrounding the cut ends of the hyoid bone are then brought together with chromic catgut sutures in such a manner as to approximate the edges of the bone. A small rubber tissue drain is introduced down to this point and the skin closed around it. It is probably best to inject sinuses with some dye, such as methylene blue, in order that any lateral branches, and these are occasionally found, which may be present between the hyoid bone and the foramen cæcum may be recognized and removed. We have never seen ill effects follow the removal of a portion of the hyoid bone, nor have we ever seen infection of a serious character follow the opening made into the mouth.

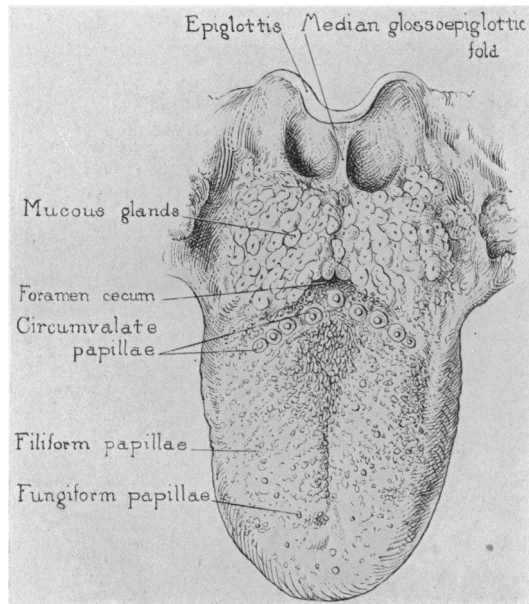


FIG. 1.—Anatomy of the dorsal surface of the tongue and the position of the foramen cæcum.

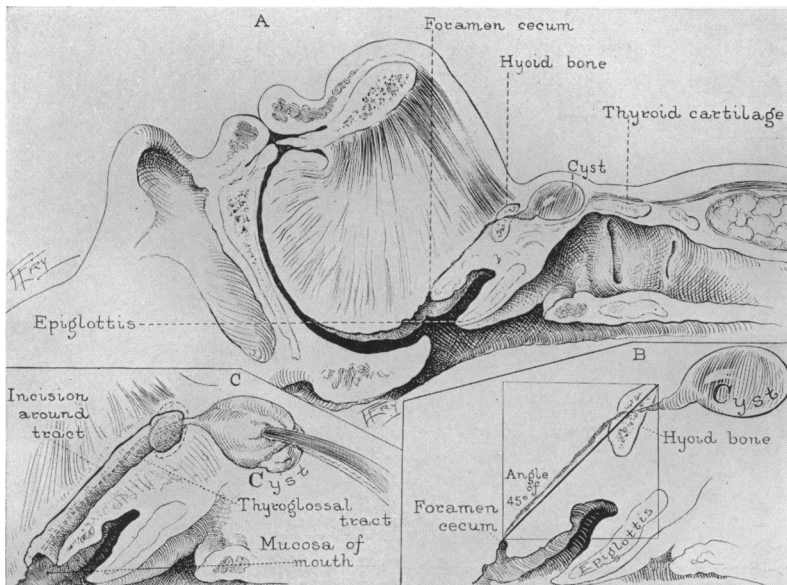


FIG. 2.—A. Sagittal section of the head giving the usual direction of the thyroglossal tract. The cyst is shown presenting between hyoid bone and thyroid cartilage. B. Dissection of duct to be made along an imaginary line drawn at an angle of  $45^\circ$  from the intersection of lines drawn horizontal and perpendicular to the middle of the anterior superior portion of the hyoid. C. The duct with muscles surrounding it being "cored out" along the line shown.

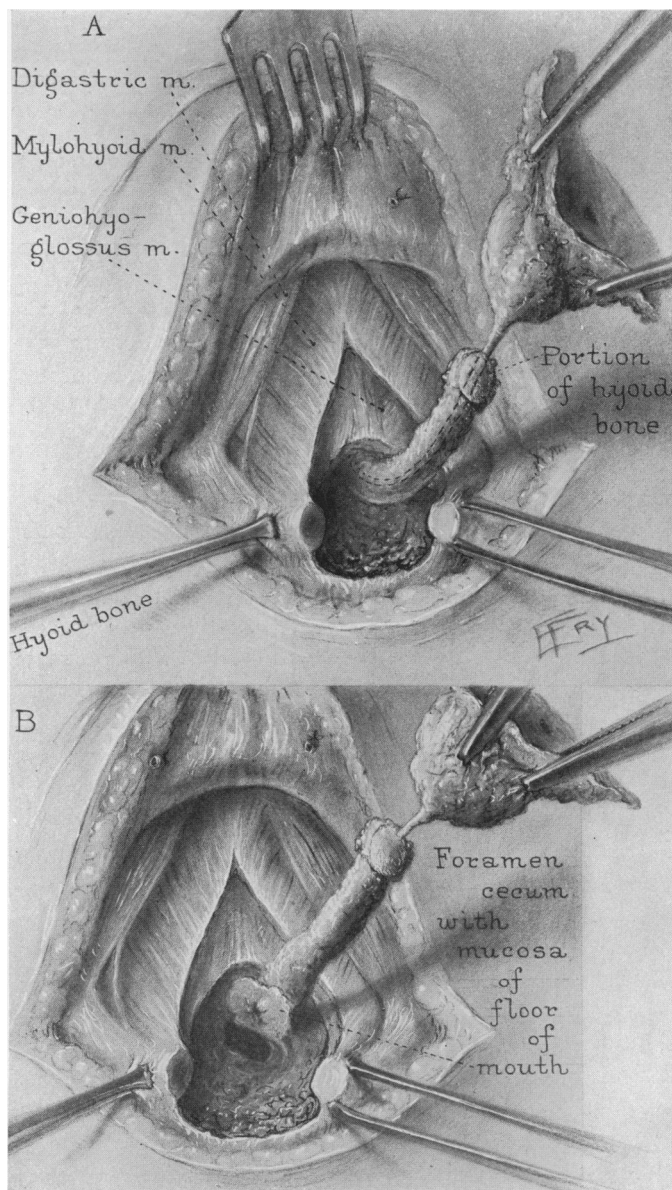


FIG. 3.—Steps of the operation. *A.* A segment of hyoid has been removed and the duct with the surrounding tissues is being dissected out. *B.* The dissection has been extended through the tongue; the foramen cæcum may be seen.